Nano River Programmer User Guide

Nano River Technologies
December 2012

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ABBREVIATIONS

API	Application Programming Interface
DIP	Dual Inline Package
I2C	Inter-Integrated Circuit Interface
NR Programmer	Nano River Programmer
NRT	Nano River Technologies ApS
SOIC	Small Outline IC package
SPI	Serial Peripheral Interface
USB	Universal Serial Bus

1. Overview

Congratulations on the purchase of the Nano River Programmer! We hope that you programmer will be a valuable tool for you for your development or electronics production needs.

The Nano River Programmer (or NR Programmer for short) is a commercial ganged programmer for serial non-volatile memories. This manual provides all necessary information for you to get up and running with the programmer.

Chapter 2	gives an overview of the product and features.
Chapter 3	provides installation instructions including how to install the driver and PC application.
Chapter 4	provides in depth details about using the PC application.
Chapter 5	provides links to where one can get further information or help about the programmer.
Appendix A	provides a list of the devices which may be programmed with NR Programmer
Appendix B	provides connector information and pin-out
Appendix C	provides details about our socket-board accessory to help program standard packages

2. Product Summary

The NR Programmer has the following key features:

- support for I2C EEPROMs
- support for SPI EEPROMs
- support for SPI flash memory
- supports over 6000 devices and packages
- programs 4 devices at a one time
- simple intuitive PC application running under Windows XP, Vista, Windows 7, and Windows 8 (MacOS and Linux supported in the future)

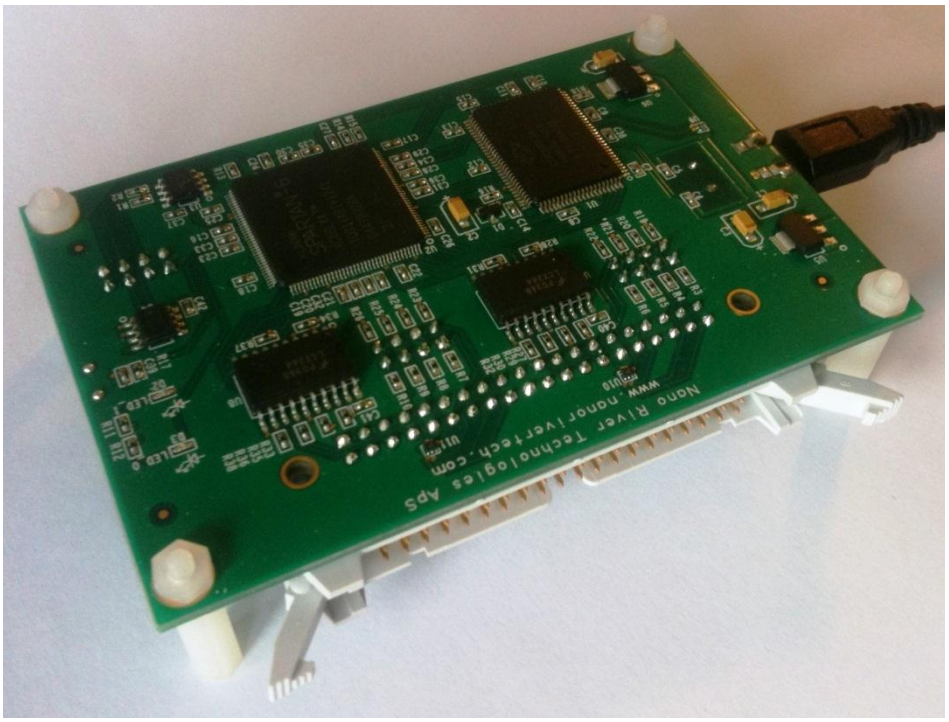


Figure 1: NR Programmer Programming Pod

The NR Programmer consists of a programming pod and a Micro-USB cable. The programming pod connects to the host PC using the uUSB cable. The programming pod connects to non volatile memory via a 40 pin ribbon cable connector provided by the customer.

The NR programmer pod also includes two LEDs. One illuminates when there is power to the programmer pod. The second flashes when there is communication with the non volatile memory.

The standard NR Programmer includes the following items:

- One programming pod (with Micro USB and 40 pin ribbon connector)
- One uUSB cable for connection to the host PC

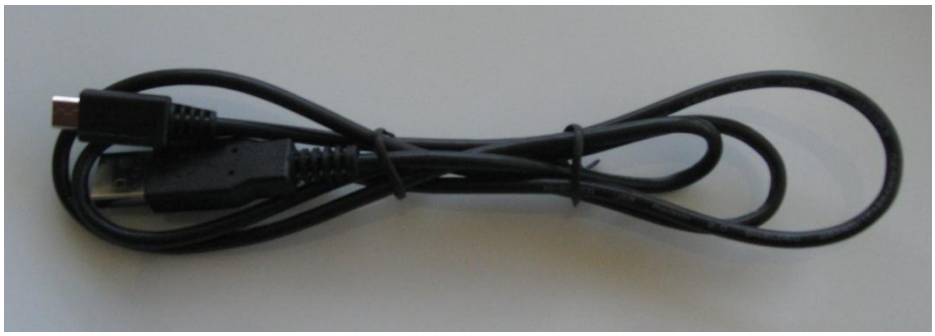


Figure 2: Micro-USB Cable

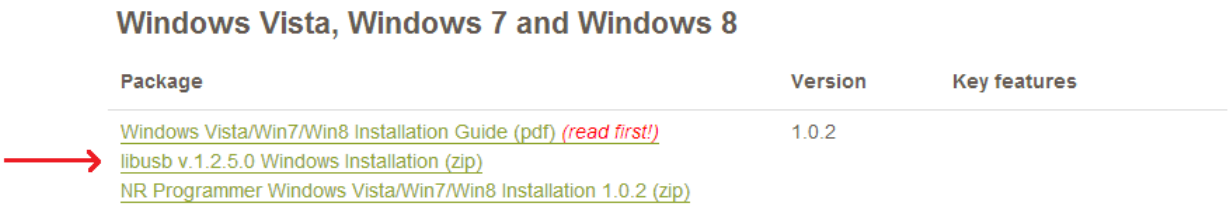
3. Installation Instructions (for Vista, Windows 7 and Windows 8)

Step 1:

Open the Windows Device Manager and remove all previous drivers for NR Programmer. This is of course not needed if you have not installed NR Programmer before. Old versions may be located as a libusb-win32 device.

Step 2:

Copy the latest device driver binary package (libusb-win32-bin-1.2.5.0.zip) from our Web page.



Step 3:

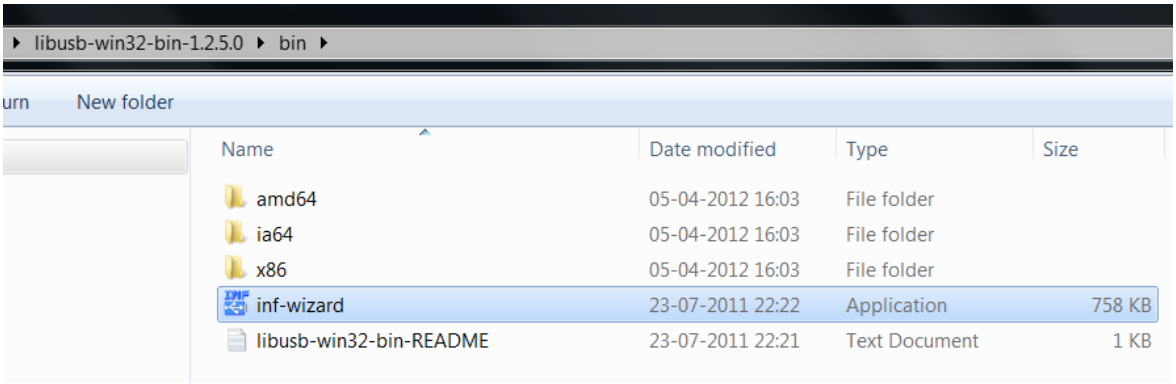
Extract it to a temporary directory.

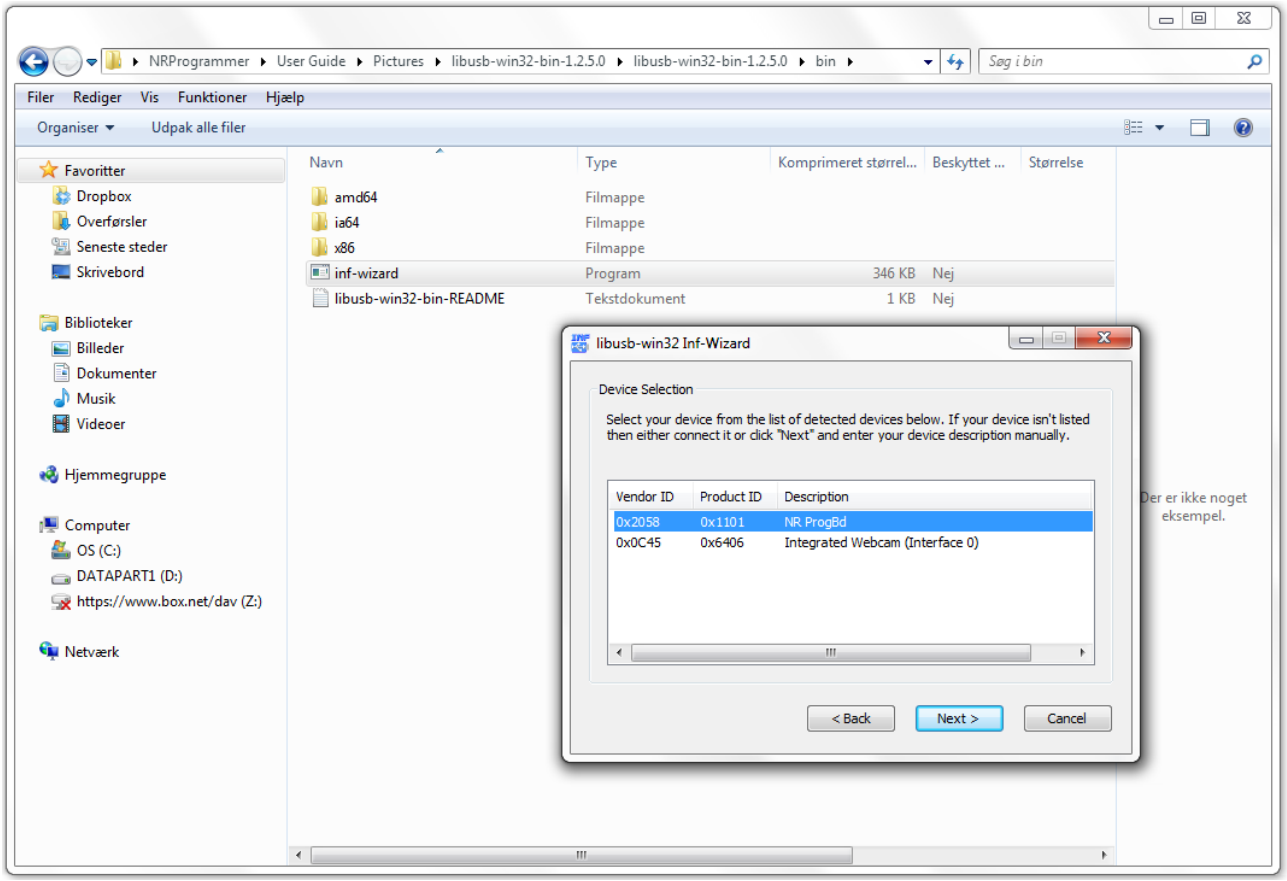
Step 4:

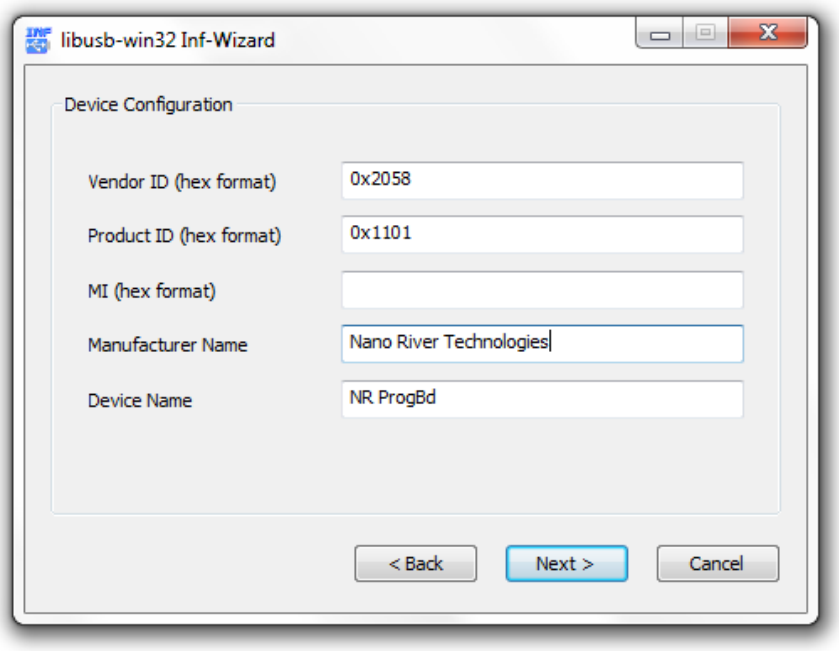
Connect your NR Programmer.

Step 5:

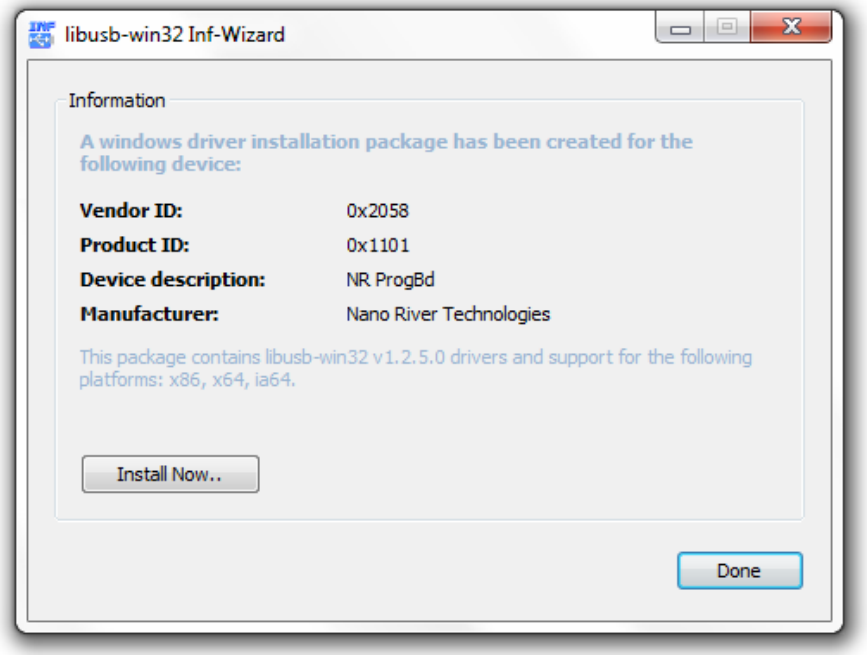
Navigate to the bin/ directory and then run the INF-Wizard program to generate the INF file.
To do this you will see other devices including NR Programmer. You should see the NR Programmer is VID=2058 and PID=1101. Select NR Programmer and then you need to enter the Manufacturer as "Nano River Technologies".



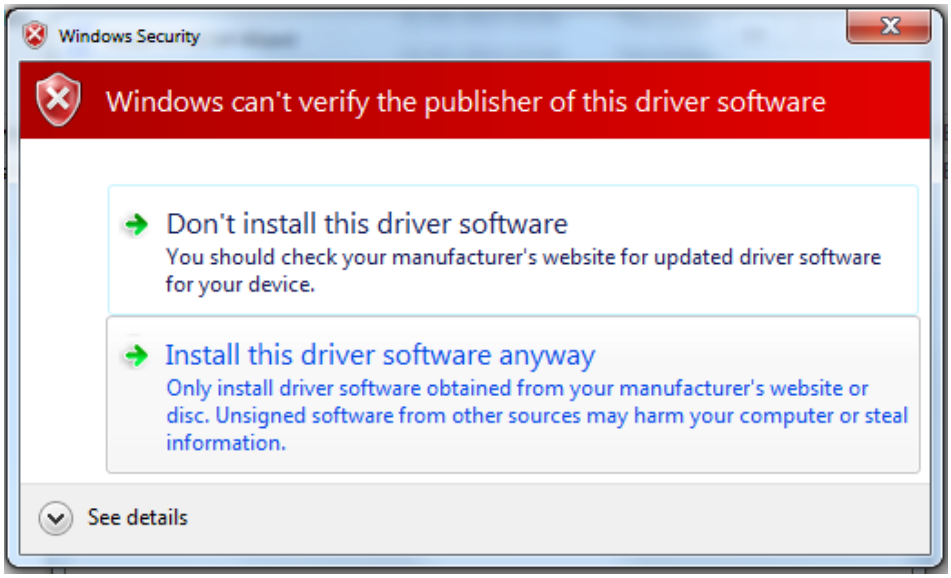




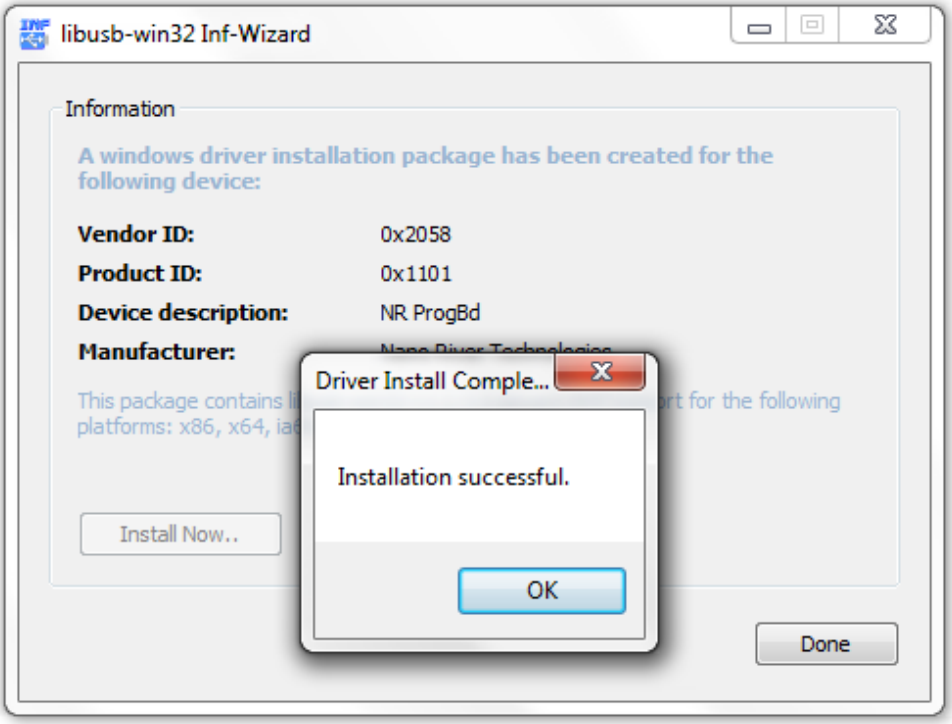
Step 6:
From within the INF-Wizard there is an option to install. Please click this to install.


libusb-win32 Inf-Wizard
Information
A windows driver installation package has been created for the following device:
Vendor ID: 0x2058
Product ID: 0x1101
Device description: NR ProgBd
Manufacturer: Nano River Technologies
This package contains libusb-win32 v1.2.5.0 drivers and support for the following platforms: x86, x64, ia64.
Install Now..
Done

Step 8:
It will warn about the publisher of the software but choose install anyway.

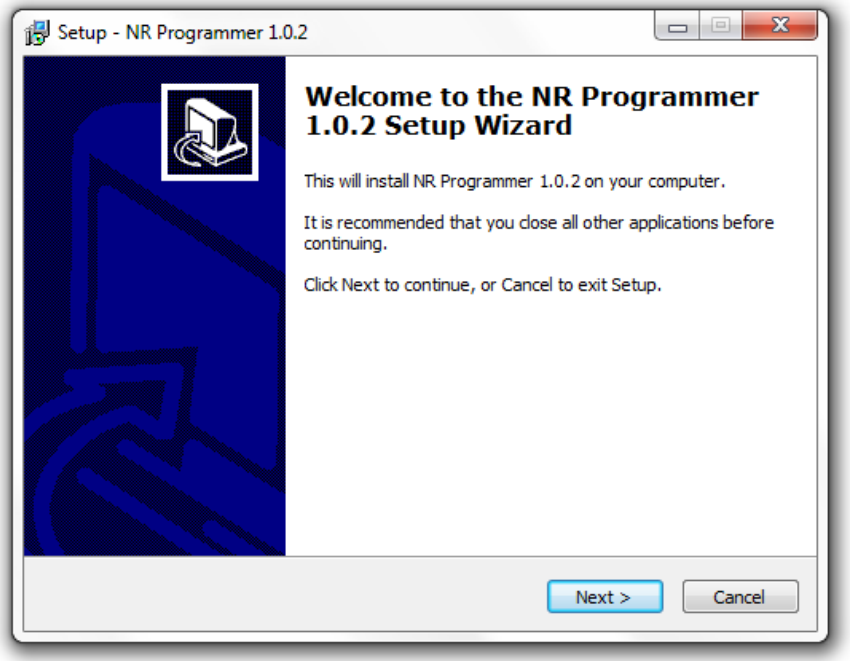

Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

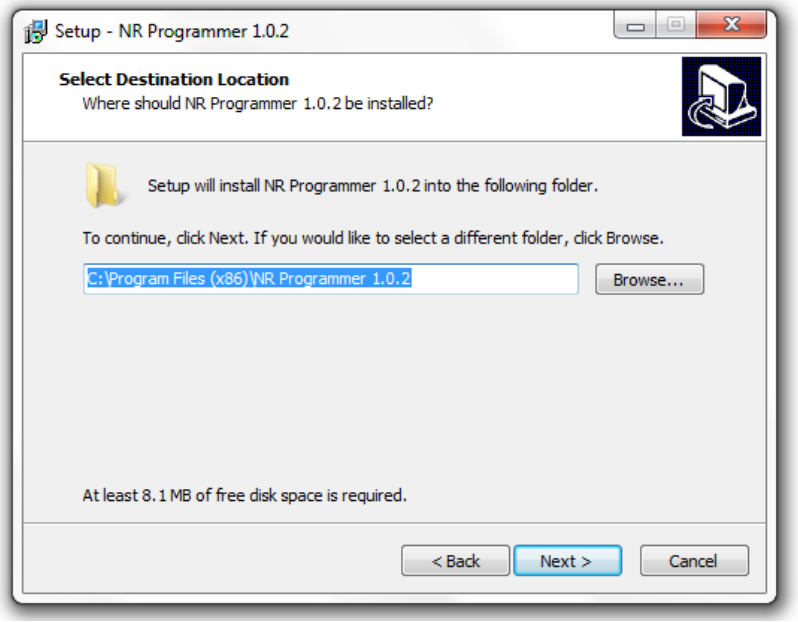
So eventually the driver is installed and complete.

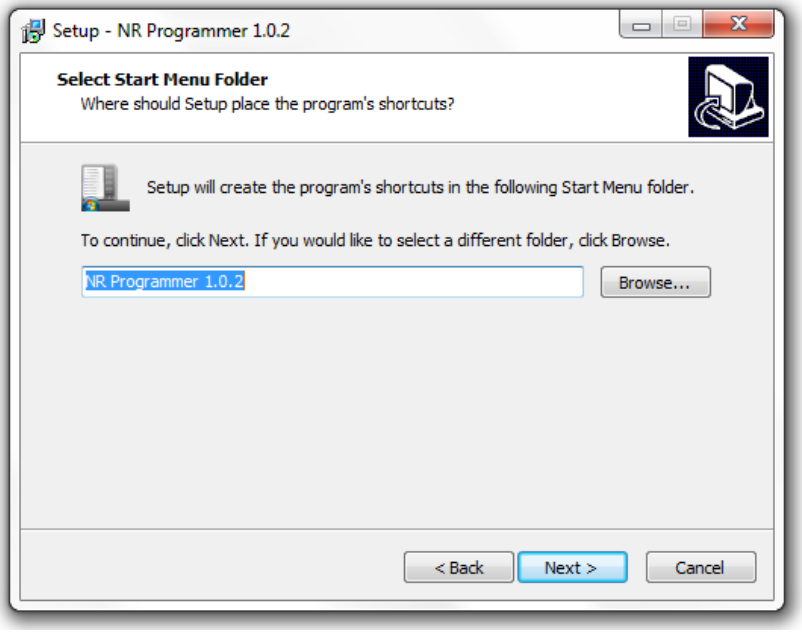


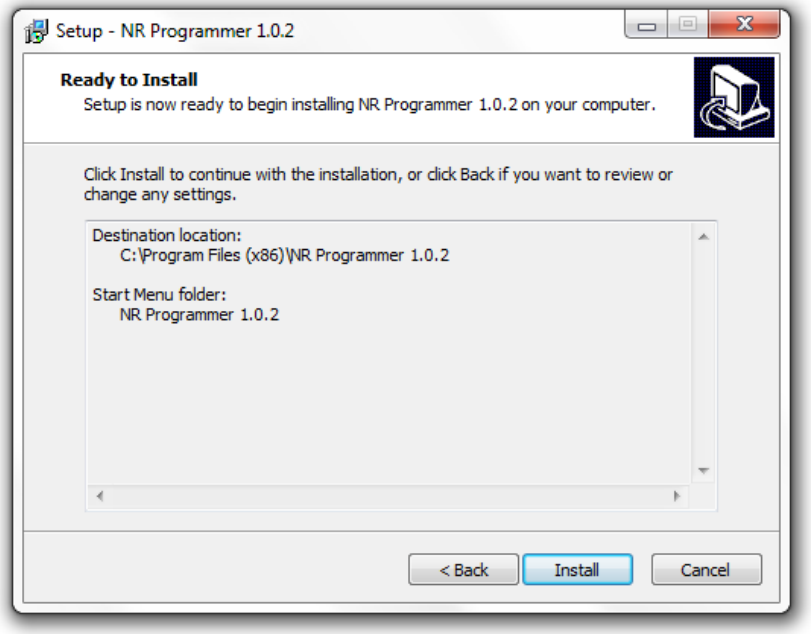
Step 9:

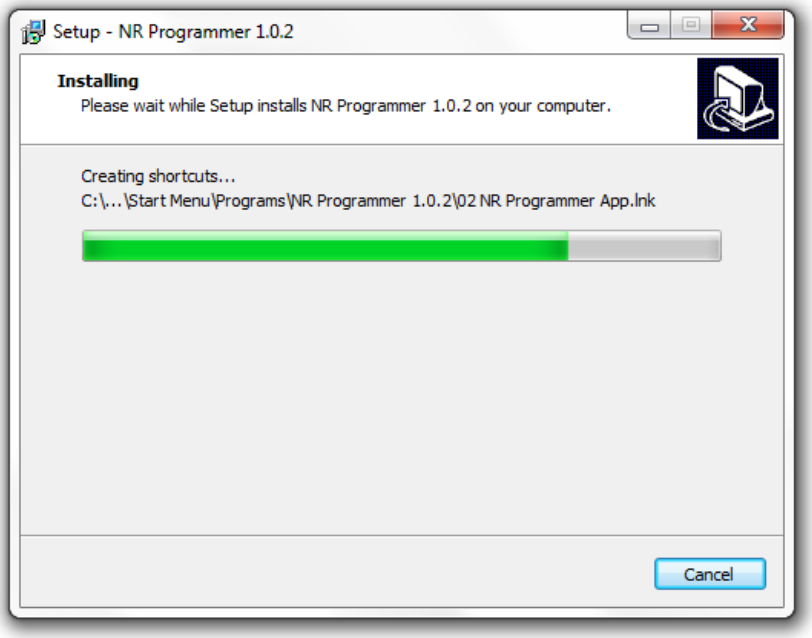
Next you will need to install the NR Programmer application. Just choose the default settings.


Setup - NR Programmer 1.0.2
Welcome to the NR Programmer 1.0.2 Setup Wizard
This will install NR Programmer 1.0.2 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

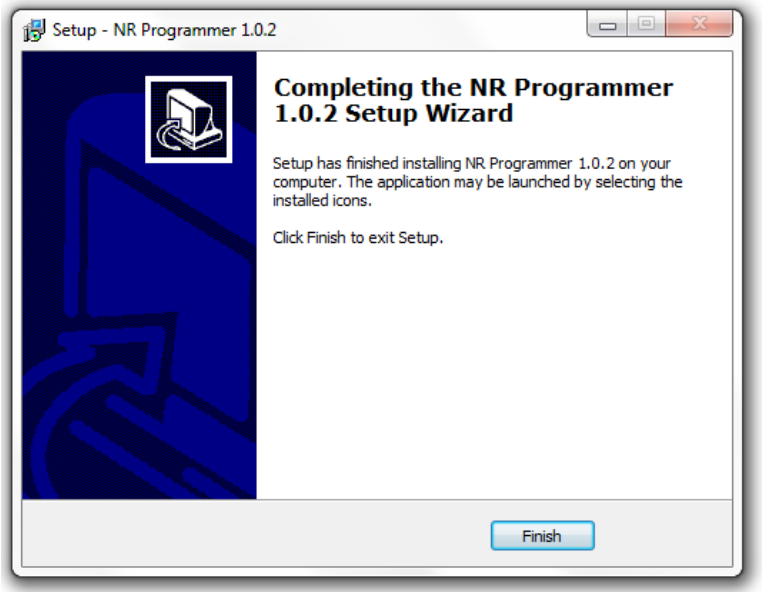

Setup - NR Programmer 1.0.2
Select Destination Location
Where should NR Programmer 1.0.2 be installed?
Setup will install NR Programmer 1.0.2 into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files (x86)\NR Programmer 1.0.2
Browse...
At least 8.1 MB of free disk space is required.
< Back
Next >
Cancel


Setup - NR Programmer 1.0.2
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
NR Programmer 1.0.2
Browse...
< Back
Next >
Cancel


Setup - NR Programmer 1.0.2
Ready to Install
Setup is now ready to begin installing NR Programmer 1.0.2 on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Program Files (x86)\NR Programmer 1.0.2
Start Menu folder:
NR Programmer 1.0.2
< Back
Install
Cancel


Setup - NR Programmer 1.0.2
Installing
Please wait while Setup installs NR Programmer 1.0.2 on your computer.
Creating shortcuts...
C:\...\Start Menu\Programs\NR Programmer 1.0.2\02 NR Programmer App.lnk
Cancel

Step 10:
You will then be complete and able to connect your board and run the application from the Windows Start Menu.


Setup - NR Programmer 1.0.2
Completing the NR Programmer 1.0.2 Setup Wizard
Setup has finished installing NR Programmer 1.0.2 on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Finish

4. PC Application Instructions

This section provides an overview of the NR Programmer application program. Figure 3 shows the various windows, displays, progress bars, buttons and drop downs when in a normal user scenario.

Image Display	The window displays 512 bytes of current image buffer. Values are in hexadecimal.
Address	To the left of the image display is the address of the left-most byte of data.
Device Detail	This lists details about the current device type which is selected.
Status Window	Is a text box showing the status of current commands.
Progress Bar	Is a status bar indicating the percentage complete of the current task.
Open	This is selection that lets you select an Intel HEX file to be loaded to the image buffer.
Save	This selection saves the current image buffer as Intel HEX file.
Select Device	Selects the device type to be worked with.
Read	This selection reads the connected device to the image buffer.
Write Device & Verify	This selection writes and then verifies one or more connected chips.
Erase	This selection erases one or more connected chips.
Write only	This function programs one or more connected chips without verification.
Verify	This function reads one or more connected chips and compares them with the current image buffer.
Stop	This is used to stop the current operation.
Line Rate	The default line rate is set by the device type selected but this pull-down lets you over-ride it.
Devices	This lets you specify which chips are connected to the programmer pod.
I2C ID	For I2C based devices; this lets you change the I2C device ID.
Connected	This tells the user if the programmer is connected to the PC.

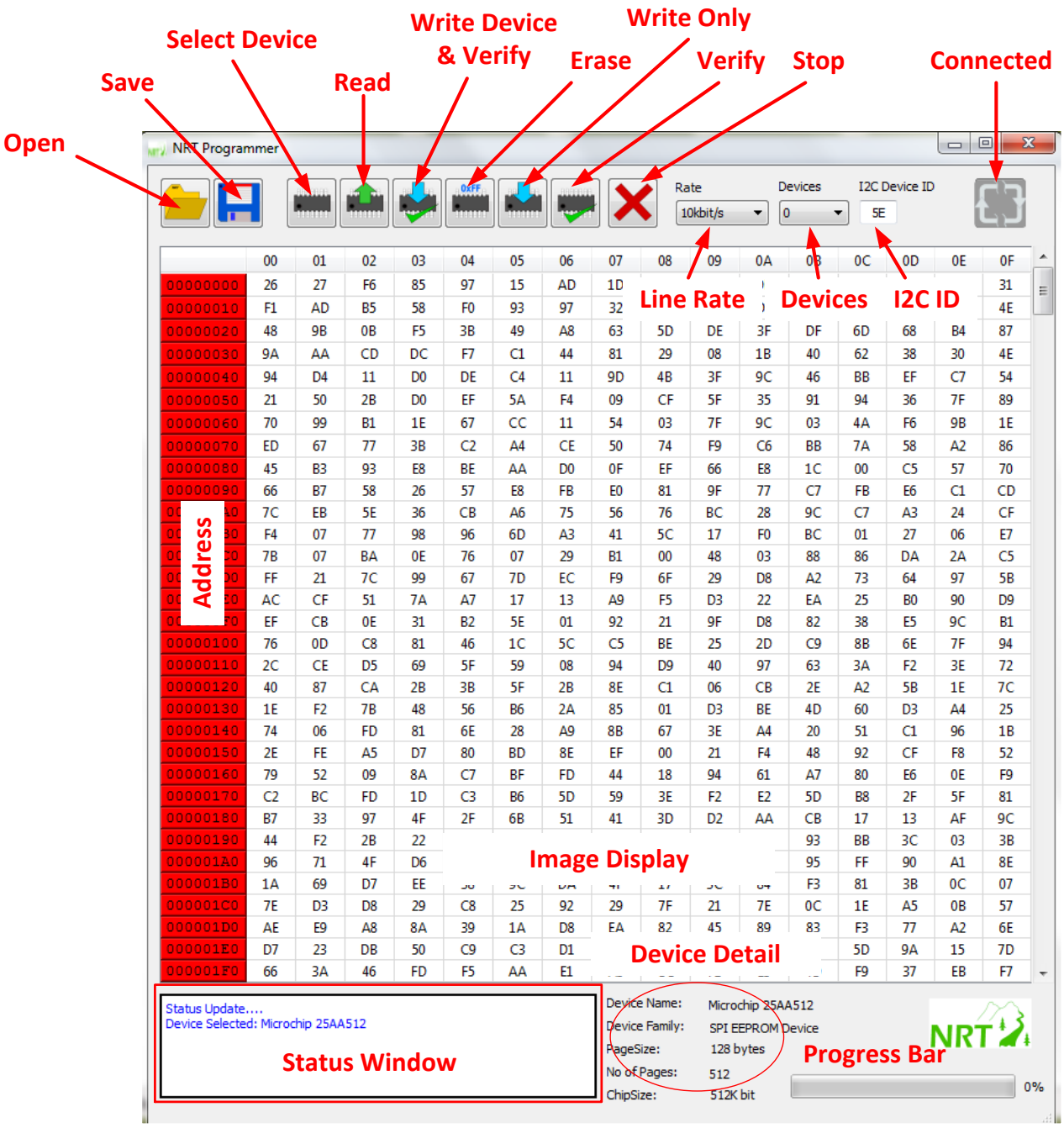


Figure 3: PC Application Basic Layout

By selecting the **Select Device** icon one can scroll down a list of currently available memory devices and select the memory you would like to program.

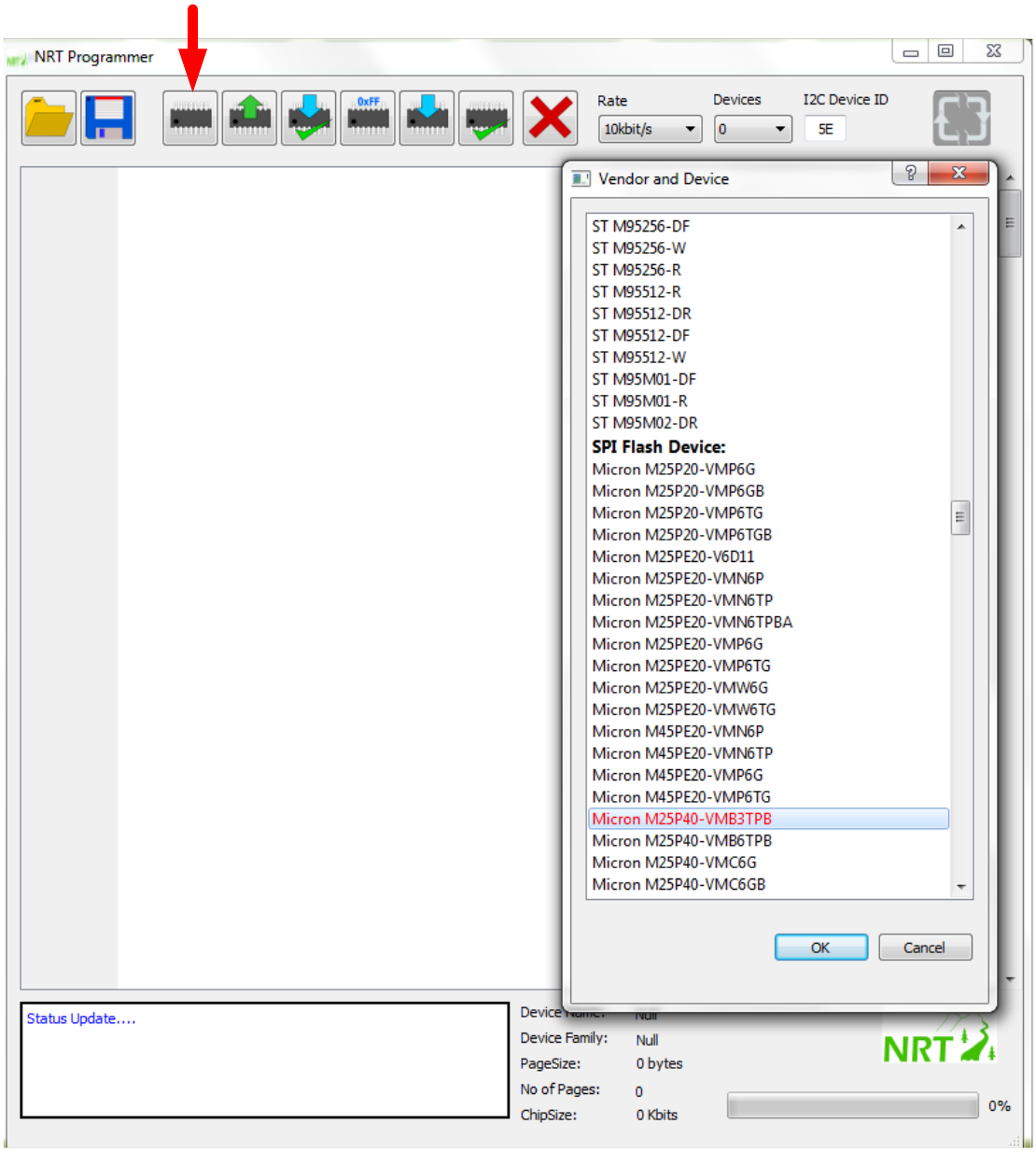


Figure 4: Select a Device

The selected device will have a default recommended line rate setting but you may also over-ride this by the **Line Rate** pull-down.

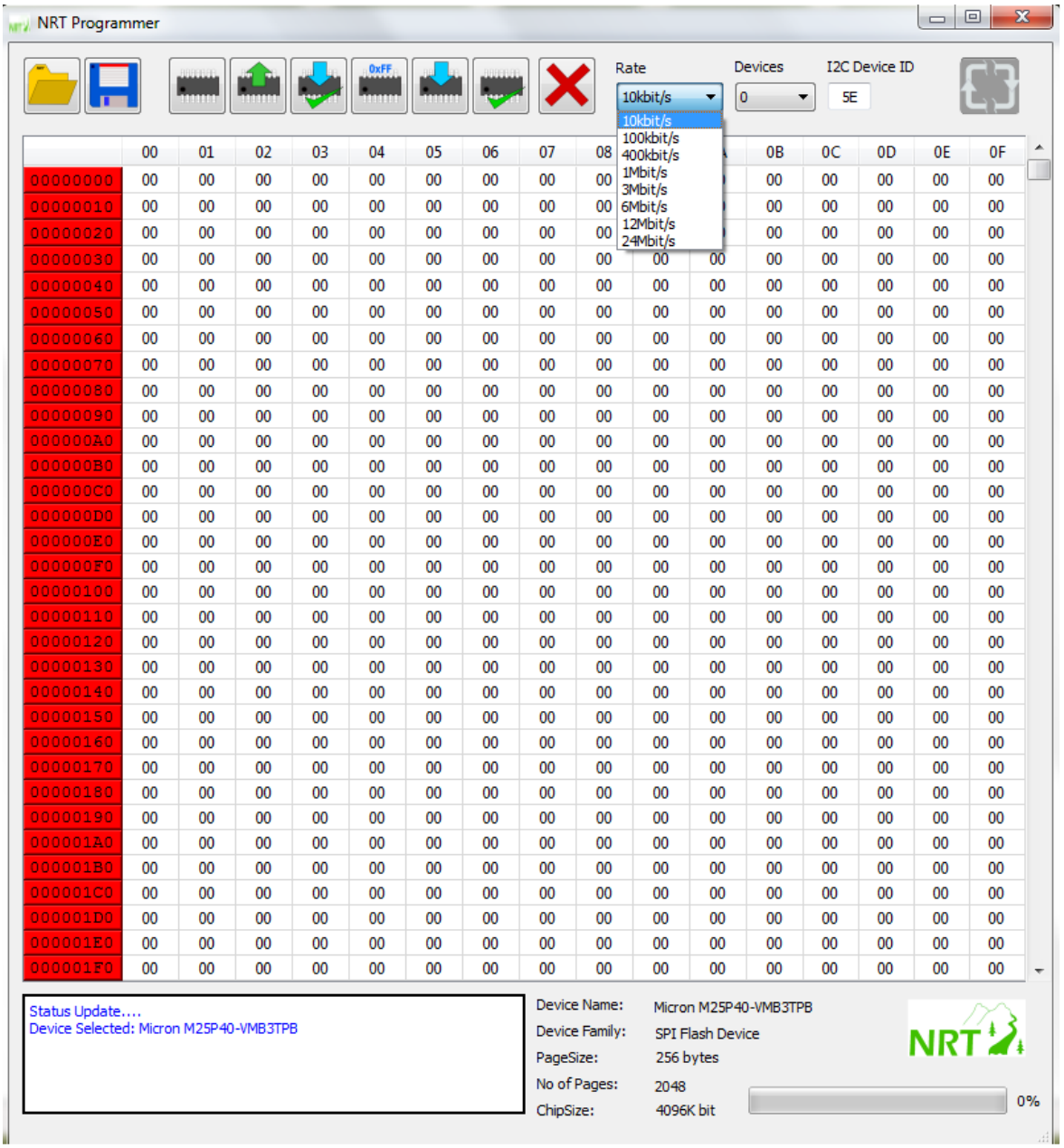


Figure 5: Change Line Rate

NR Programmer can program up to 4 devices at one time. One may specify which devices are connected to the device with the **Devices** pull-down.

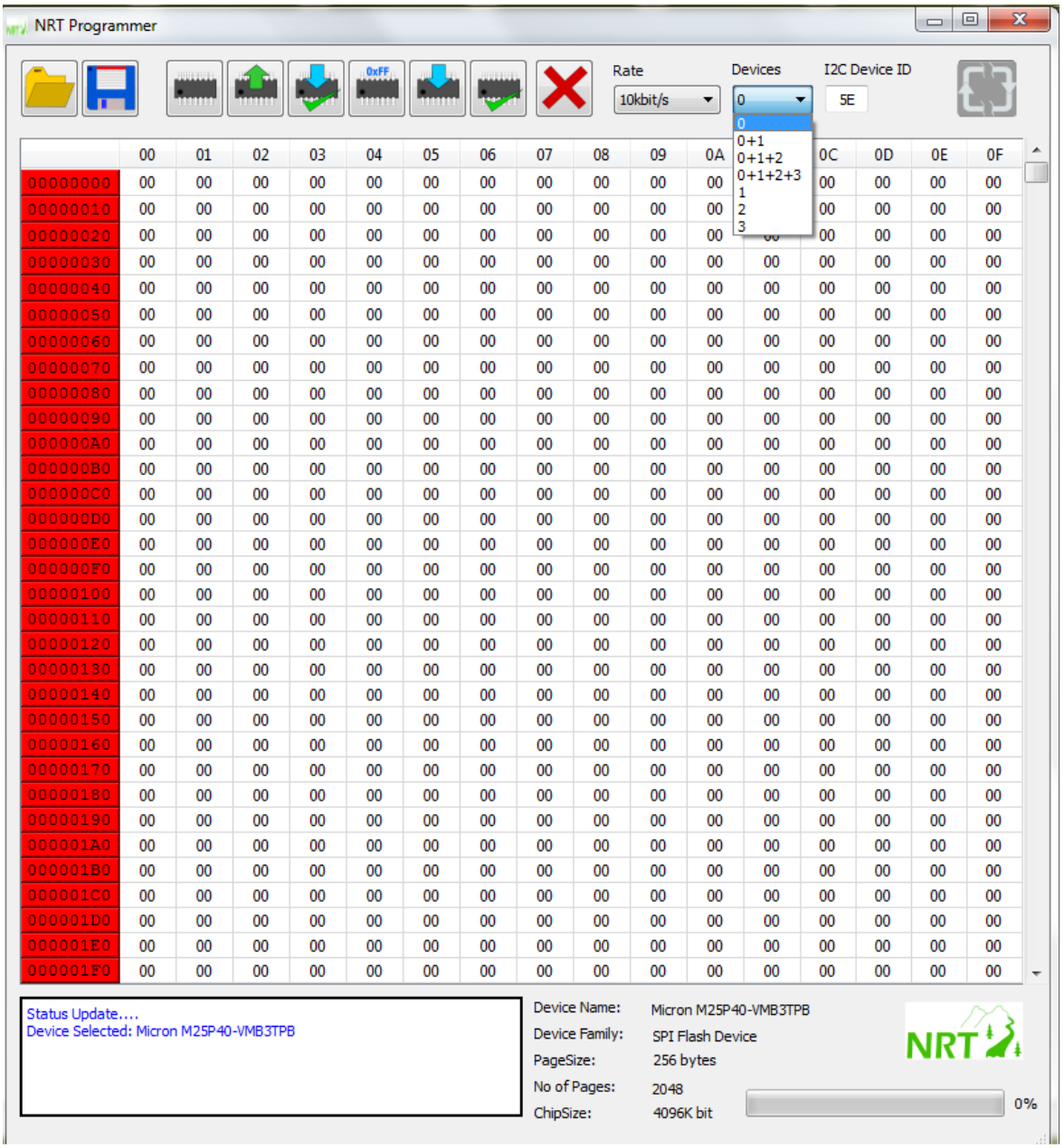


Figure 6: Change Device

For I2C based devices one may also over-ride the I2C device ID using the **I2C ID** textbox.

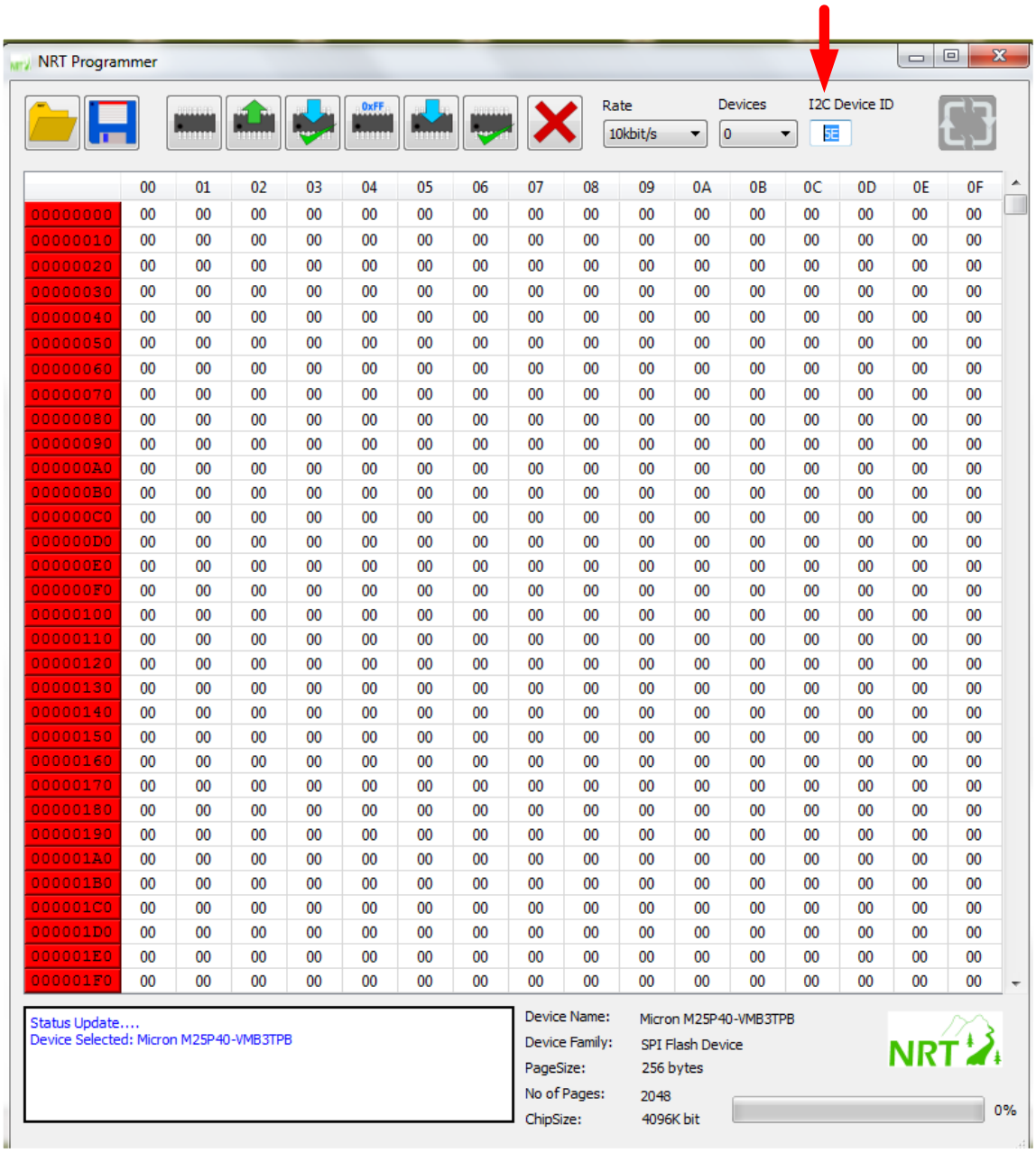


Figure 7: Change the I2C Address

To read a device, select the **Read** button. For ganged usage only the last device is displayed in the image display.

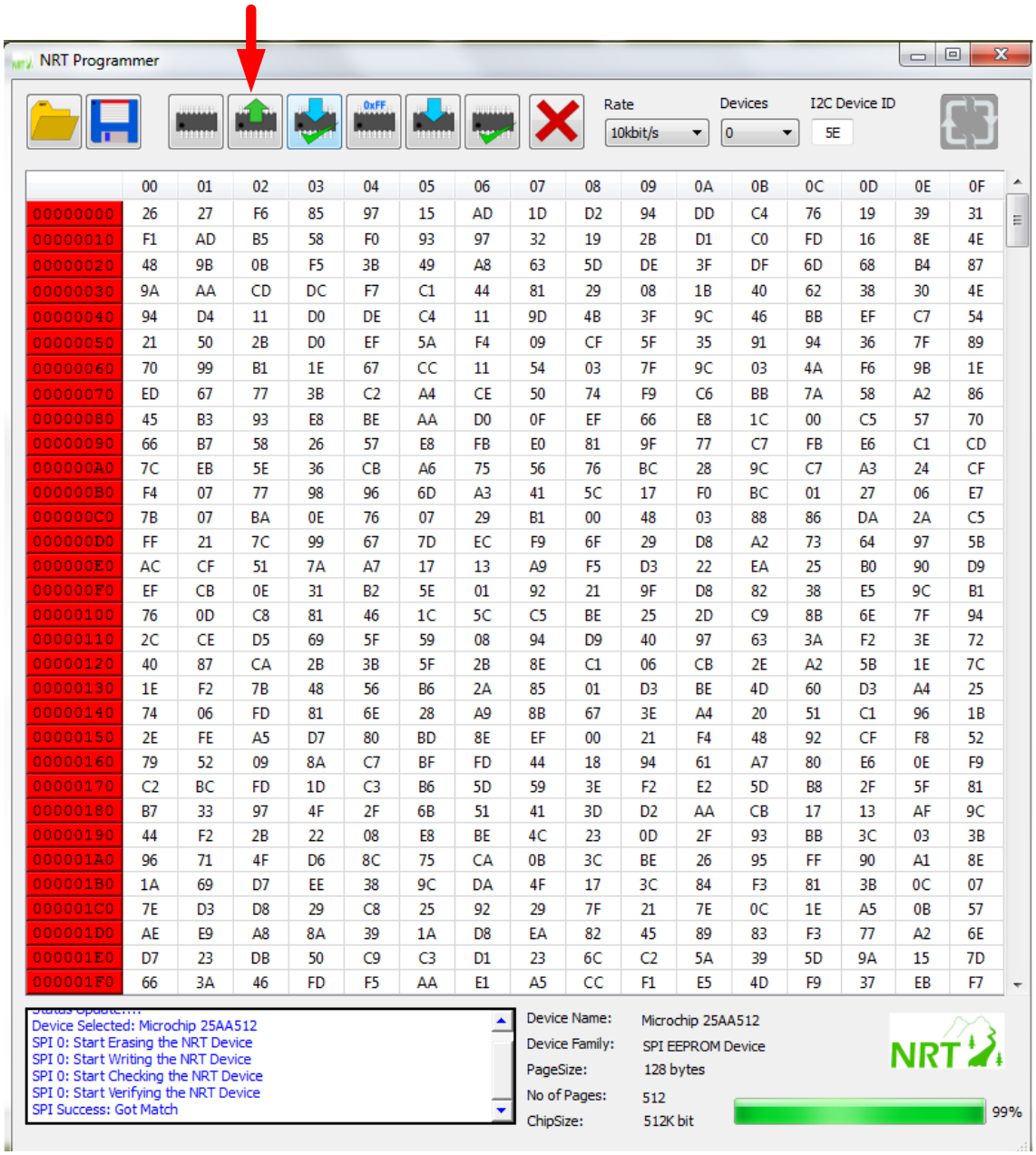


Figure 8: Read a Device

To erase a device, select the **Erase** button. For ganged usage then all connected chips are erased.

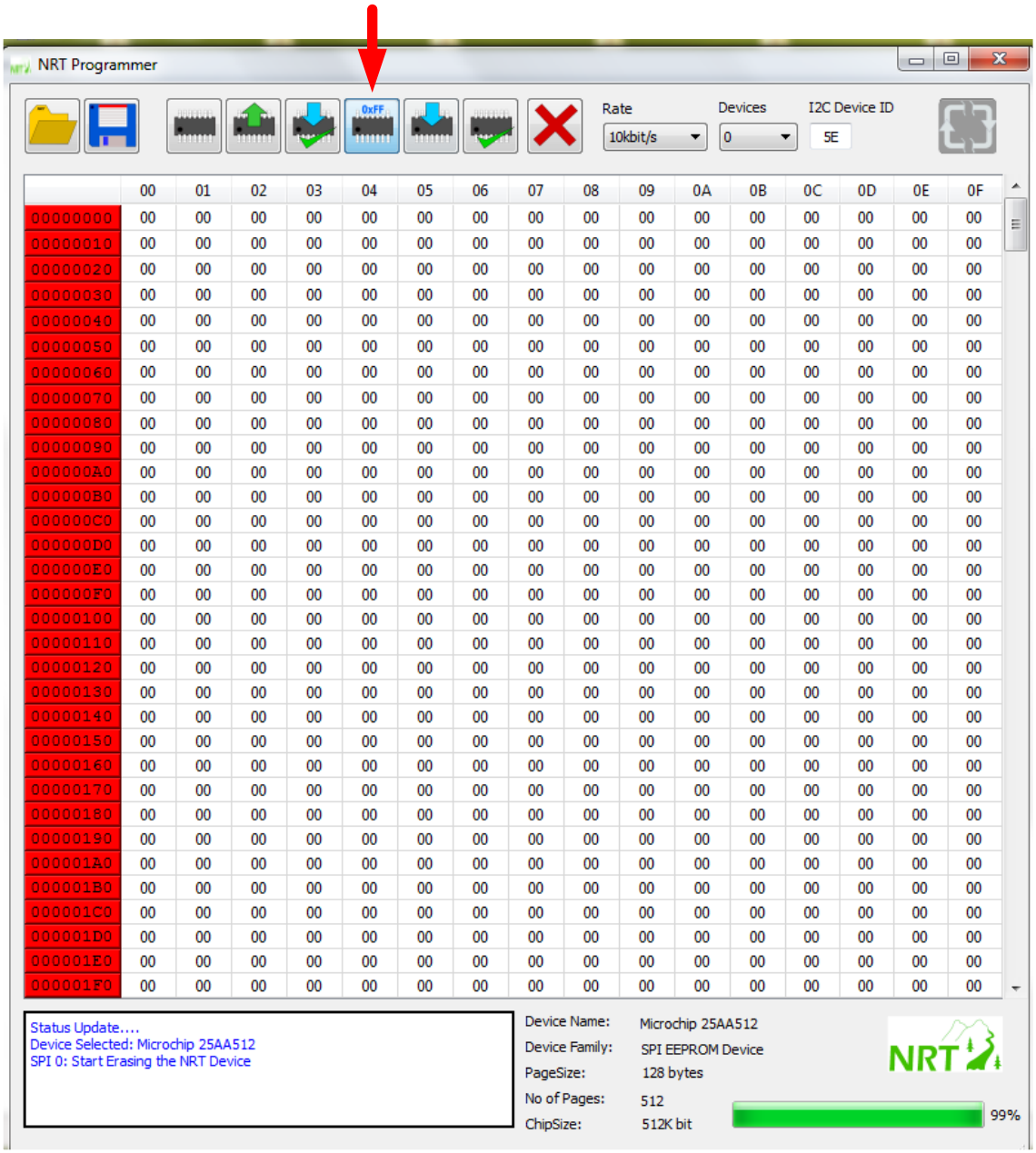


Figure 9: Erase a Device

One can open an Intel HEX file and load this into the image buffer using the **Open** file button.

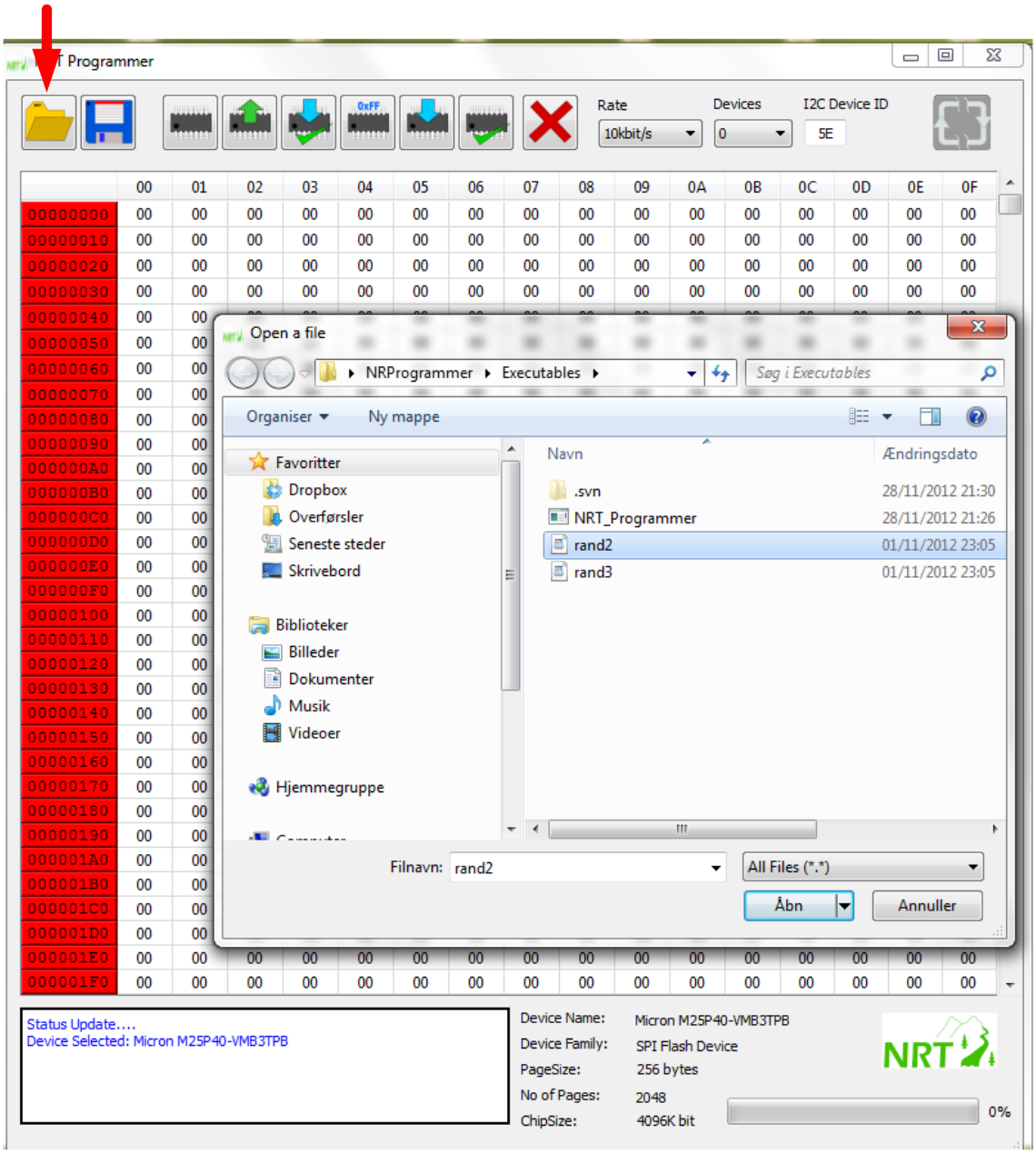


Figure 10: Open a File

You can write the current image and then verify for all connected devices using the **Write Device and Verify** button. Status is provided in the status window.

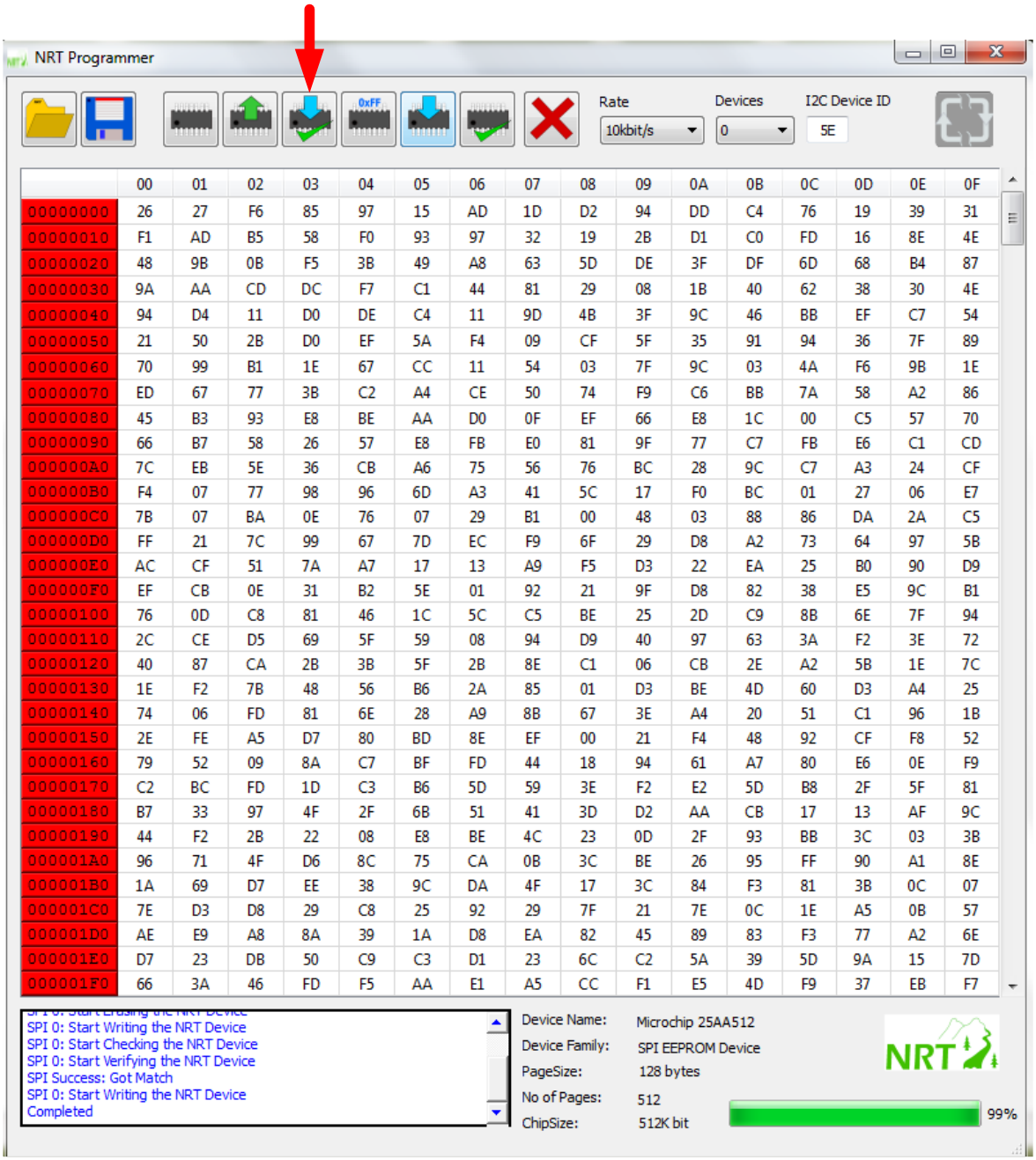


Figure 11: Write Device and Verify

You may also select the **Write Only** button is you want programming of the connected devices without verification.

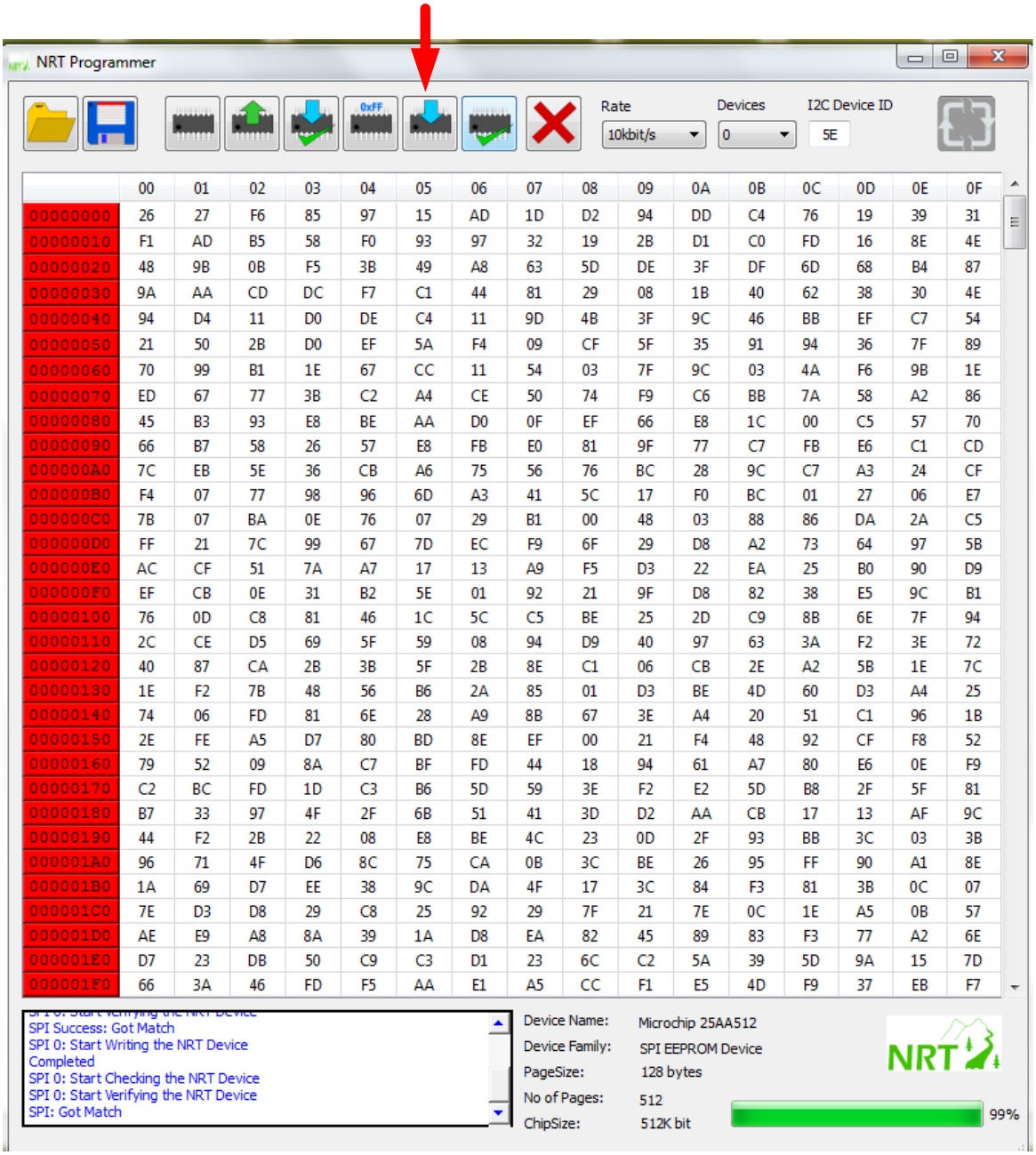


Figure 12: Write Only and Not Verify

Selection of the **Verify** button will cause all connected devices to be read and then checked against the current buffer image.

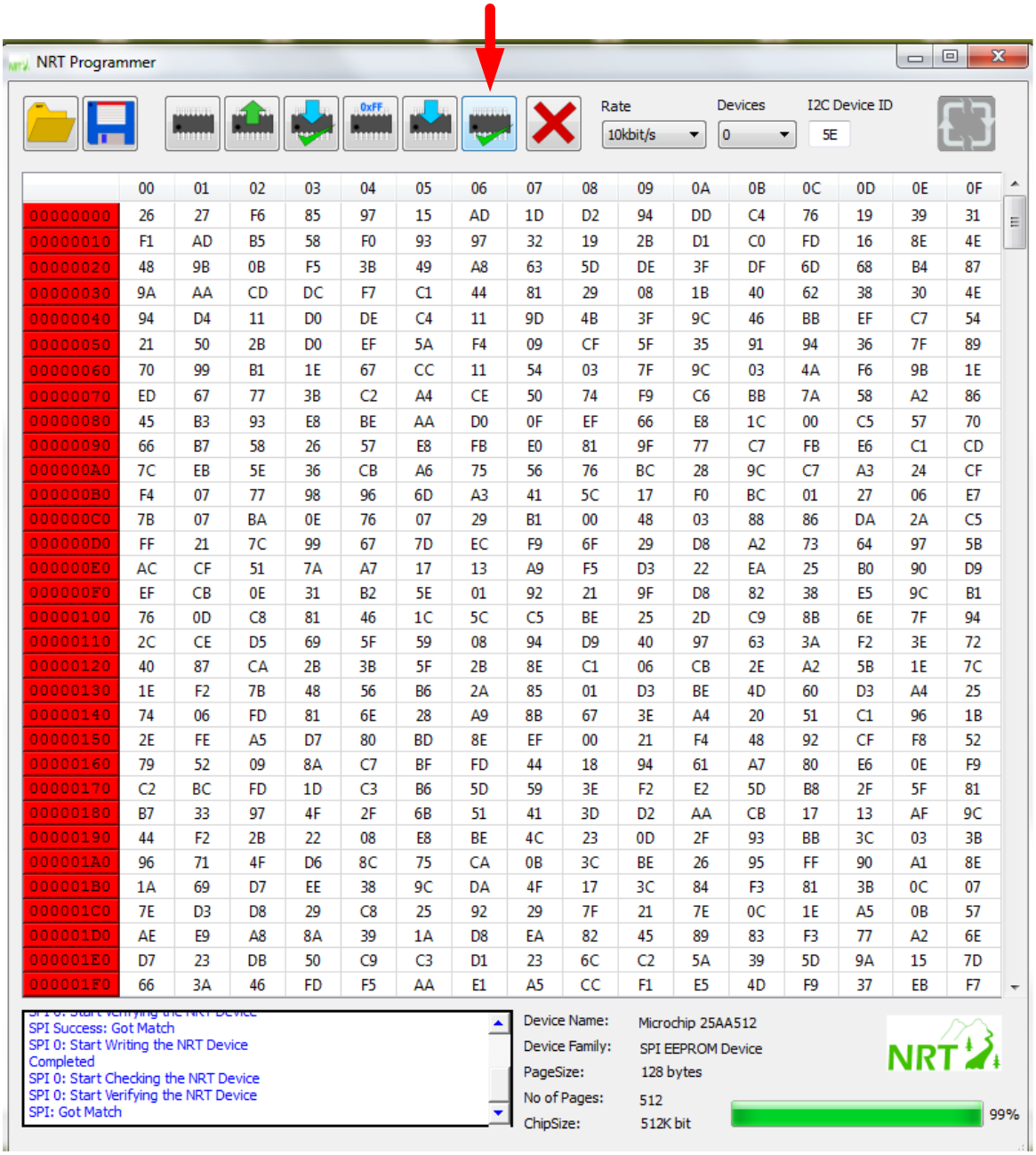


Figure 13: Verify Only

One can save the current buffer image to Intel HEX file using the Save button.

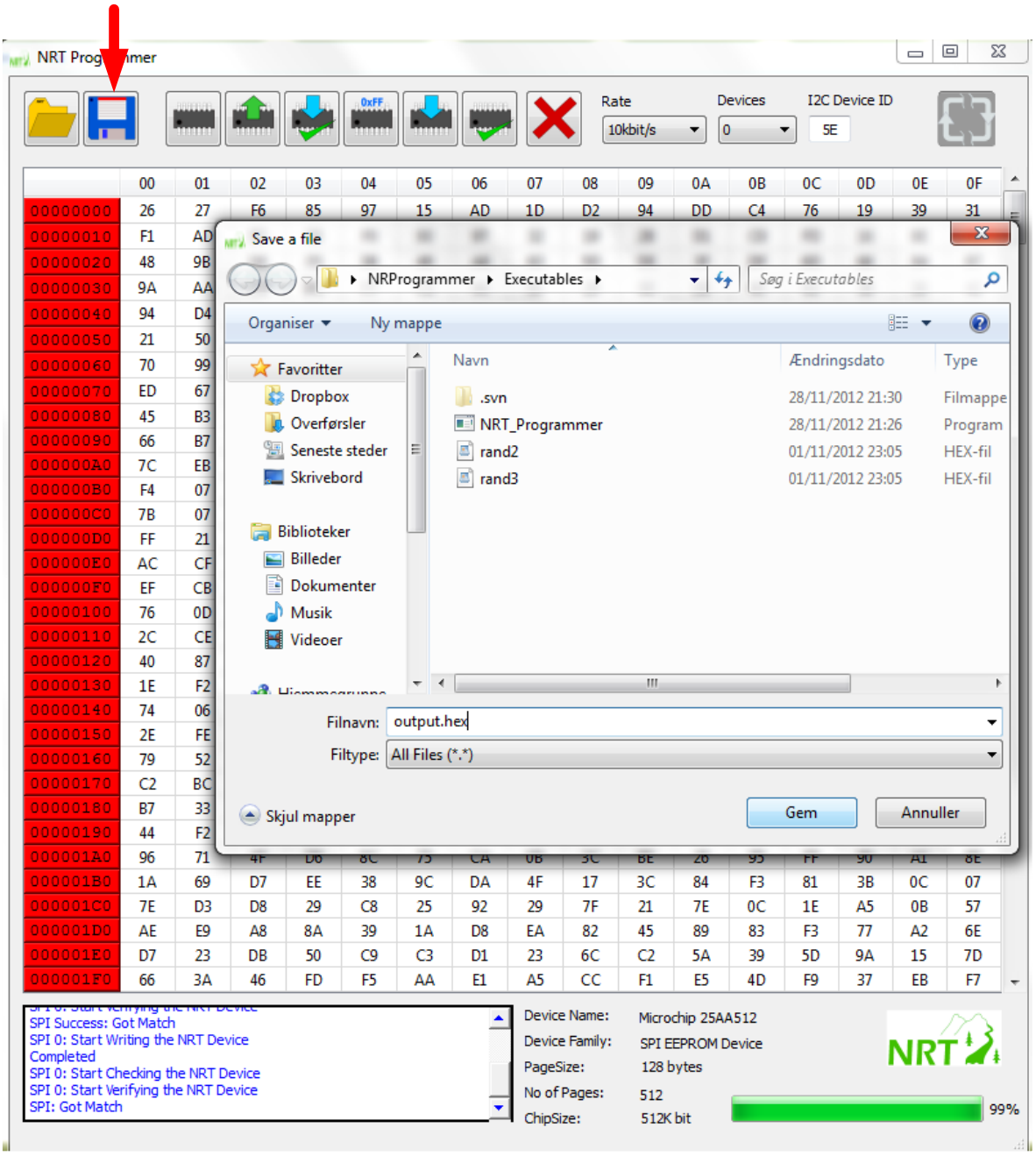


Figure 14: Save Image to a File

5. Technical Support

Technical information regarding the programmer can be found on our web-site (www.nanorivertech.com). The NR Programmer application will be continually improved to support the latest non-volatile memories and to fix any issues found in programming supported devices.

If you find devices not supported or issues with existing devices then please send a technical enquiry to:

support@nanorivertech.com

6. Appendix A: Supported Devices

NR Programmer supports the following devices in all package variants.

I2C EEPROM

Atmel AT24C01B
Atmel AT24C02B
Atmel AT24C04B
Atmel AT24C08B
Atmel AT24C01C
Atmel AT24C02C
Atmel AT24C04C
Atmel AT24C08C
Atmel AT24C1024B
Atmel AT24C128 Automotive
Atmel AT24C256 Automotive
Atmel AT24C128C
Atmel AT24C16C
Atmel AT24C16C Automotive
Atmel AT24C256C
Atmel AT24C32A Automotive
Atmel AT24C64A Automotive
Atmel AT24C32D Automotive
Atmel AT24C64D Automotive
Atmel AT24C32D
Atmel AT24C64D
Atmel AT24C512C
Atmel AT24C64B
Atmel AT24C64B Automotive
Atmel AT24CM01
Atmel AT24HC02B
Atmel AT24HC02B Automotive
Atmel AT24HC04B Automotive
Atmel AT24HC02C
Atmel AT24HC04B
Atmel AT34C02C
Atmel AT34C02C Automotive
Atmel AT34C02D
Microchip 24AA00
Microchip 24C00
Microchip 24LC00
Microchip 24AA01
Microchip 24AA014
Microchip 24AA014H
Microchip 24AA01H
Microchip 24LC014
Microchip 24LC014H
Microchip 24LC01B
Microchip 24LC01BH
Microchip 24LC21A
Microchip 24LCS21A
Microchip 24VL014
Microchip 24VL014H
Microchip 24AA02
Microchip 24AA024
Microchip 24AA024H
Microchip 24AA025
Microchip 24AA025E48
Microchip 24AA02E48
Microchip 24AA02H
Microchip 24LC024
Microchip 24LC024H
Microchip 24LC025
Microchip 24LC02B
Microchip 24LC02BH
Microchip 24LC22A
Microchip 24LCS22A
Microchip 24VL024
Microchip 24VL024H
Microchip 24VL025
Microchip 24AA04
Microchip 24AA04H
Microchip 24LC04B
Microchip 24LC04BH
Microchip 24AA08
Microchip 24AA08H
Microchip 24LC08B
Microchip 24LC08BH
Microchip 24AA16
Microchip 24AA16H
Microchip 24LC16B
Microchip 24LC16BH
Microchip 24AA32A
Microchip 24AA32AF
Microchip 24LC32A
Microchip 24LC32AF
Microchip 24AA64
Microchip 24AA64F
Microchip 24AA65
Microchip 24FC64
Microchip 24LC64
Microchip 24LC64F
Microchip 24LC65
Microchip 24AA128
Microchip 24FC128
Microchip 24LC128
Microchip 24AA256
Microchip 24FC256
Microchip 24LC256
Microchip 24AA512
Microchip 24AA515
Microchip 24FC512
Microchip 24FC515
Microchip 24LC512
Microchip 24LC515
Microchip 24AA1025
Microchip 24AA1026
Microchip 24FC1025
Microchip 24FC1026
Microchip 24LC1025
Microchip 24LC1026
ST M24C01-W
ST M24C01-R
ST M24C02-W
ST M24C02-R
ST M24C04-W
ST M24C04-R
ST M24C04-F
ST M24C08-W
ST M24C08-R
ST M24C08-F
ST M24C016-W
ST M24C016-R
ST M24C016-F
ST M24C32-DF
ST M24C32-F
ST M24C32-R
ST M24C32-W
ST M24C32-X
ST M24C64-DF
ST M24C64-F
ST M24C64-R
ST M24C64-W
ST M24128-BF
ST M24128-BR
ST M24128-BW
ST M24128-DF
ST M24256-BF
ST M24256-BR

ST M24256-BW
ST M24256-DR
ST M24256-DF
ST M24512-DF
ST M24512-DR
ST M24512-R
ST M24512-W
ST M24M01-R
ST M24M01-DF
ST M24M02-DR

SPI EEPROMs

Atmel AT25010B Automotive
Atmel AT25020B Automotive
Atmel AT25040B Automotive
Atmel AT25080A Automotive
Atmel AT25160A Automotive
Atmel AT25320B Automotive
Atmel AT25640B Automotive
Atmel AT25080B Automotive
Atmel AT25160B Automotive
Atmel AT25320B Automotive
Atmel AT25640B Automotive
Atmel AT25128B Automotive
Atmel AT25256B Automotive
Atmel AT25010B
Atmel AT25020B
Atmel AT25040B
Atmel AT25080B
Atmel AT25160B
Atmel AT25320B
Atmel AT25640B
Atmel AT25128B
Atmel AT25256B
Atmel AT25512
Microchip 25AA010A
Microchip 25LC010A
Microchip 25AA020A
Microchip 25AA02E48
Microchip 25LC020A
Microchip 25AA040A
Microchip 25LC040A
Microchip 25AA080C
Microchip 25AA080D
Microchip 25LC080C
Microchip 25LC080D
Microchip 25AA160C
Microchip 25AA160D
Microchip 25LC160C
Microchip 25LC160D
Microchip 25AA320A
Microchip 25LC320A
Microchip 25AA640A
Microchip 25LC640A
Microchip 25AA128
Microchip 25LC128
Microchip 25AA256
Microchip 25LC256
Microchip 25AA512
Microchip 25LC512
Microchip 25AA1024
Microchip 25LC1024
ST M95010-R
ST M95010-W
ST M95020-R
ST M95020-W
ST M95040-W
ST M95040-R
ST M95080-R
ST M95080-W
ST M95160-F
ST M95160-R
ST M95160-W
ST M95320-DR
ST M95320-W
ST M95320-R
ST M95640-DR
ST M95640-R
ST M95640-W
ST M95128-W
ST M95128-R
ST M95128-DF
ST M95256-DR
ST M95256-DF
ST M95256-W
ST M95256-R
ST M95512-R
ST M95512-DR
ST M95512-DF
ST M95512-W
ST M95M01-DF
ST M95M01-R
ST M95M02-DR

SPI Flash Memory

Micron M25P20-VMP6G
Micron M25P20-VMP6GB
Micron M25P20-VMP6TG
Micron M25P20-VMP6TGB
Micron M25PE20-V6D11
Micron M25PE20-VMN6P
Micron M25PE20-VMN6TP
Micron M25PE20-VMN6TPBA
Micron M25PE20-VMP6G
Micron M25PE20-VMP6TG
Micron M25PE20-VMW6G
Micron M25PE20-VMW6TG
Micron M45PE20-VMN6P
Micron M45PE20-VMN6TP
Micron M45PE20-VMP6G
Micron M45PE20-VMP6TG
Micron M25P40-VMB3TPB
Micron M25P40-VMB6TPB
Micron M25P40-VMC6G
Micron M25P40-VMC6GB
Micron M25P40-VMC6TG
Micron M25P40-VMC6TGB
Micron M25P40-VMN3PB
Micron M25P40-VMN3TPB
Micron M25P40-VMN6P
Micron M25P40-VMN6PB
Micron M25P40-VMN6PBA
Micron M25P40-VMN6TP
Micron M25P40-VMN6TPB
Micron M25P40-VMN6TPBA
Micron M25P40-VMP6G
Micron M25P40-VMP6GB
Micron M25P40-VMP6TGB
Micron M25P40-VMW6G
Micron M25P40-VMW6GB
Micron M25P40-VMW6TG
Micron M25P40-VMW6TGB
Micron M25PE40S-VMN6P
Micron M25PE40S-VMN6TP
Micron M25PE40-VMC6G
Micron M25PE40-VMC6TG
Micron M25PE40-VMN6P
Micron M25PE40-VMN6TP
Micron M25PE40-VMN6TPBA
Micron M25PE40-VMP6G
Micron M25PE40-VMP6TG
Micron M25PE40-VMW6G
Micron M25PE40-VMW6TG
Micron M45PE40S-VMN6P
Micron M45PE40S-VMN6TP
Micron M45PE40-VMN6P
Micron M45PE40-VMN6TP
Micron M45PE40-VMP6G
Micron M45PE40-VMP6TG
Micron M45PE40-VMW6G
Micron M45PE40-VMW6TG
Micron M25P80S-VMN6P
Micron M25P80S-VMN6TP

Micron M25P80-VMC6G
Micron M25P80-VMC6TG
Micron M25P80-VMN3PB
Micron M25P80-VMN3TPB
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Micron M25P80-VMP6G
Micron M25P80-VMP6TG
Micron M25P80-VMW6G
Micron M25P80-VMW6TG
Micron M25PE80-VMN6P
Micron M25PE80-VMN6TP
Micron M25PE80-VMN6TPBA
Micron M25PE80-VMP6G
Micron M25PE80-VMP6TG
Micron M25PE80-VMW6G
Micron M25PE80-VMW6TG
Micron M25PX80-VBA6P
Micron M25PX80-VMN6P
Micron M25PX80-VMN6TP
Micron M25PX80-VMN6TPBA
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Micron M25PX80-VMP6TG
Micron M25PX80-VMW6G
Micron M25PX80-VMW6TG
Micron M25PX80-VZM6P
Micron M25PX80-VZM6TP
Micron M45PE80-VMN6P
Micron M45PE80-VMN6TP
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Micron M45PE80-VMP6TG
Micron M45PE80-VMW6G
Micron M45PE80-VMW6TG
Micron M25P16S-VMN6P
Micron M25P16S-VMN6TP
Micron M25P16-V6D11
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Micron M25P16-VMC6TG
Micron M25P16-VME6G
Micron M25P16-VME6TG
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Micron M25P16-VMF3TPB
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Micron M25P16-VMF6PBA
Micron M25P16-VMF6TP
Micron M25P16-VMN3PB
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Micron M25PX16SOVZM6TP
Micron M25PX16STVZM6TP
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Micron M25PX16-VMN6TP
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Micron M25PX16-VMP6TG
Micron M25PX16-VMW6G
Micron M25PX16-VMW6TG
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Micron M45PE16-VMW6TG
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Micron M25PX32-VMF6F
Micron M25PX32-VMP6E
Micron M25PX32-VMP6F
Micron M25PX32-VMP6FBA
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Micron M25PX32-VMW6F
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Micron M25PX32-VZM6F
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Micron N25Q032A13E1241F
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Micron N25Q032A13EF840F
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Micron N25Q032A13ESC40G
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Micron N25Q032A13ESE40F
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Micron N25Q064A13EF8A0F
Micron N25Q064A13EF8H0F
Micron N25Q064A13ESE40F
Micron N25Q064A13ESE40G
Micron N25Q064A13ESEH0F

Micron N25Q064A13ESF40F
Micron N25Q064A13ESF40G
Micron N25Q064A13ESFA0F
Micron N25Q064A13ESFH0F
Micron M25P128-VME6GB
Micron M25P128-VME6TGB
Micron M25P128-VMF6PB
Micron M25P128-VMF6TPB
Micron N25Q128A13B1240E
Micron N25Q128A13B1240F
Micron N25Q128A13BF840E
Micron N25Q128A13BF840F
Micron N25Q128A13BSF40F
Micron N25Q128A13BSF40G
Micron N25Q128A13BSFH0F
Micron N25Q128A13E1240E
Micron N25Q128A13E1240F
Micron N25Q128A13E1241E
Micron N25Q128A13E1241F
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Micron N25Q128A13EF840F
Micron N25Q128A13EF8A0F
Micron N25Q128A13ESE40E
Micron N25Q128A13ESE40F
Micron N25Q128A13ESE40G
Micron N25Q128A13ESF40E
Micron N25Q128A13ESF40F
Micron N25Q128A13ESF40G
Micron N25Q128A13ESFA0F
Micron N25Q128A13ESFH0F
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Micron N25Q256A13E1240F
Micron N25Q256A13E1241E
Micron N25Q256A13E1241F
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Micron N25Q256A13EF840F
Micron N25Q256A13ESF40F
Micron N25Q256A13ESF40G
Micron N25Q256A13ESFA0F
Micron N25Q256A13ESFH0F
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Micron N25Q256A83E1241F
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Micron N25Q512A83G1241F
Micron N25Q512A83GSF40F
Micron N25Q512A83GSF40G
Micron N25Q00AA13G1240E
Micron N25Q00AA13G1240F
Micron N25Q00AA13GSF40F
Micron N25Q00AA13GSF40G
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Atmel AT25DF081A
Atmel AT25DF321A
Atmel AT25DF641
Atmel AT25DF641A
Atmel AT25DQ321
Atmel AT25F512B
Atmel AT45DB011D
Atmel AT45DB021D
Atmel AT45DB021E
Atmel AT45DB041D
Atmel AT45DB081D
Atmel AT45DB161D
Atmel AT45DB161E
Atmel AT45DB321D
Atmel AT45DB321E
Atmel AT45DB642D
Atmel AT45BR3214B
Atmel AT45CS1282
Atmel AT45DB011
Atmel AT45DB011B

7. Appendix B: Connector Details (40-pin ribbon)

The following table shows the pin out for the 40 pin ribbon cable connector on the NR programmer pod.

Pin	Name	Direction	Level	Description
Channel #4				
1	0V	Power	0V	Ground Connection
2	5V	Power	5V	Power from NR Programmer
3	I2C_SCL_4	OUT	3.3V or 5V	I2C clock signal out from NR Programmer **(channel #4)**
4	I2C_SDA_4	IN/OUT	3.3V or 5V	I2C data signal in/out to/from NR Programmer **(channel #4)**
5	SPI_DI_4	IN	3.3V or 5V	SPI data signal in to NR Programmer **(channel #4)**
6	SPI_DO_4	OUT	3.3V or 5V	SPI data signal out from NR Programmer **(channel #4)**
7	SPI_SCK_4	OUT	3.3V or 5V	SPI clock signal out from NR Programmer **(channel #4)**
8	SPI_CSN_4	OUT	3.3V or 5V	SPI chip select signal out from NR Programmer **(channel #4)**
9	0V	Power	0V	Ground Connection
10	3.3V	Power	3.3V	Power from NR Programmer
Channel #3				
11	0V	Power	0V	Ground Connection
12	5V	Power	5V	Power from NR Programmer
13	I2C_SCL_3	OUT	3.3V or 5V	I2C clock signal out from NR Programmer **(channel #3)**
14	I2C_SDA_3	IN/OUT	3.3V or 5V	I2C data signal in/out to/from NR Programmer **(channel #3)**
15	SPI_DI_3	IN	3.3V or 5V	SPI data signal in to NR Programmer **(channel #3)**
16	SPI_DO_3	OUT	3.3V or 5V	SPI data signal out from NR Programmer **(channel #3)**
17	SPI_SCK_3	OUT	3.3V or 5V	SPI clock signal out from NR Programmer **(channel #3)**
18	SPI_CSN_3	OUT	3.3V or 5V	SPI chip select signal out from NR Programmer **(channel #3)**
19	0V	Power	0V	Ground Connection
20	3.3V	Power	3.3V	Power from NR Programmer
Channel #2				
21	0V	Power	0V	Ground Connection
22	5V	Power	5V	Power from NR Programmer
23	I2C_SCL_2	OUT	3.3V or 5V	I2C clock signal out from NR Programmer **(channel #2)**
24	I2C_SDA_2	IN/OUT	3.3V or 5V	I2C data signal in/out to/from NR Programmer **(channel #2)**
25	SPI_DI_2	IN	3.3V or 5V	SPI data signal in to NR Programmer **(channel #2)**
26	SPI_DO_2	OUT	3.3V or 5V	SPI data signal out from NR Programmer **(channel #2)**
27	SPI_SCK_2	OUT	3.3V or 5V	SPI clock signal out from NR Programmer **(channel #2)**
28	SPI_CSN_2	OUT	3.3V or 5V	SPI chip select signal out from NR Programmer **(channel #2)**
29	0V	Power	0V	Ground Connection
30	3.3V	Power	3.3V	Power from NR Programmer
Channel #1				
31	0V	Power	0V	Ground Connection
32	5V	Power	5V	Power from NR Programmer
33	I2C_SCL_1	OUT	3.3V or 5V	I2C clock signal out from NR Programmer **(channel #1)**
34	I2C_SDA_1	IN/OUT	3.3V or 5V	I2C data signal in/out to/from NR Programmer **(channel #1)**
35	SPI_DI_1	IN	3.3V or 5V	SPI data signal in to NR Programmer **(channel #1)**
36	SPI_DO_1	OUT	3.3V or 5V	SPI data signal out from NR Programmer **(channel #1)**
37	SPI_SCK_1	OUT	3.3V or 5V	SPI clock signal out from NR Programmer **(channel #1)**
38	SPI_CSN_1	OUT	3.3V or 5V	SPI chip select signal out from NR Programmer **(channel #1)**
39	0V	Power	0V	Ground Connection
40	3.3V	Power	3.3V	Power from NR Programmer

8. Appendix C: Socket Board Accessory

For programming of common packaged memories in DIP or SOIC then one can purchase the NR Socket Board accessory. The board plugs directly into the NR Programmer and allows programming of 4 NV memories at one time.

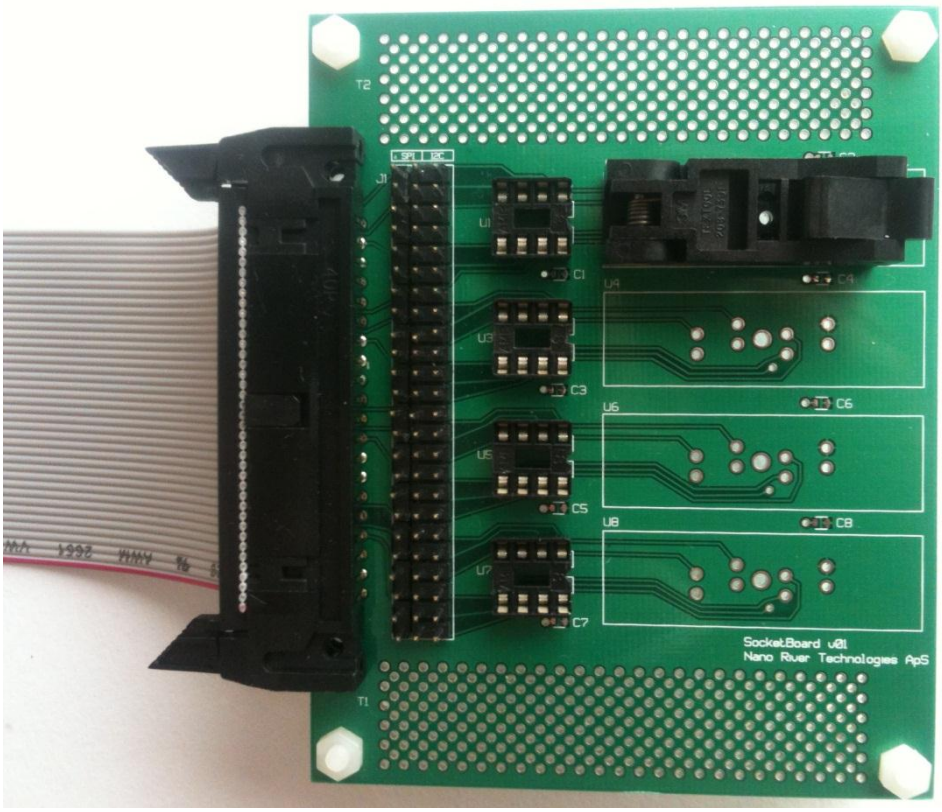

Figure 15: NR Socket Board

Figure 16 provides the schematic for this. The board is fitted with low insertion force sockets for batch programming of memory devices.

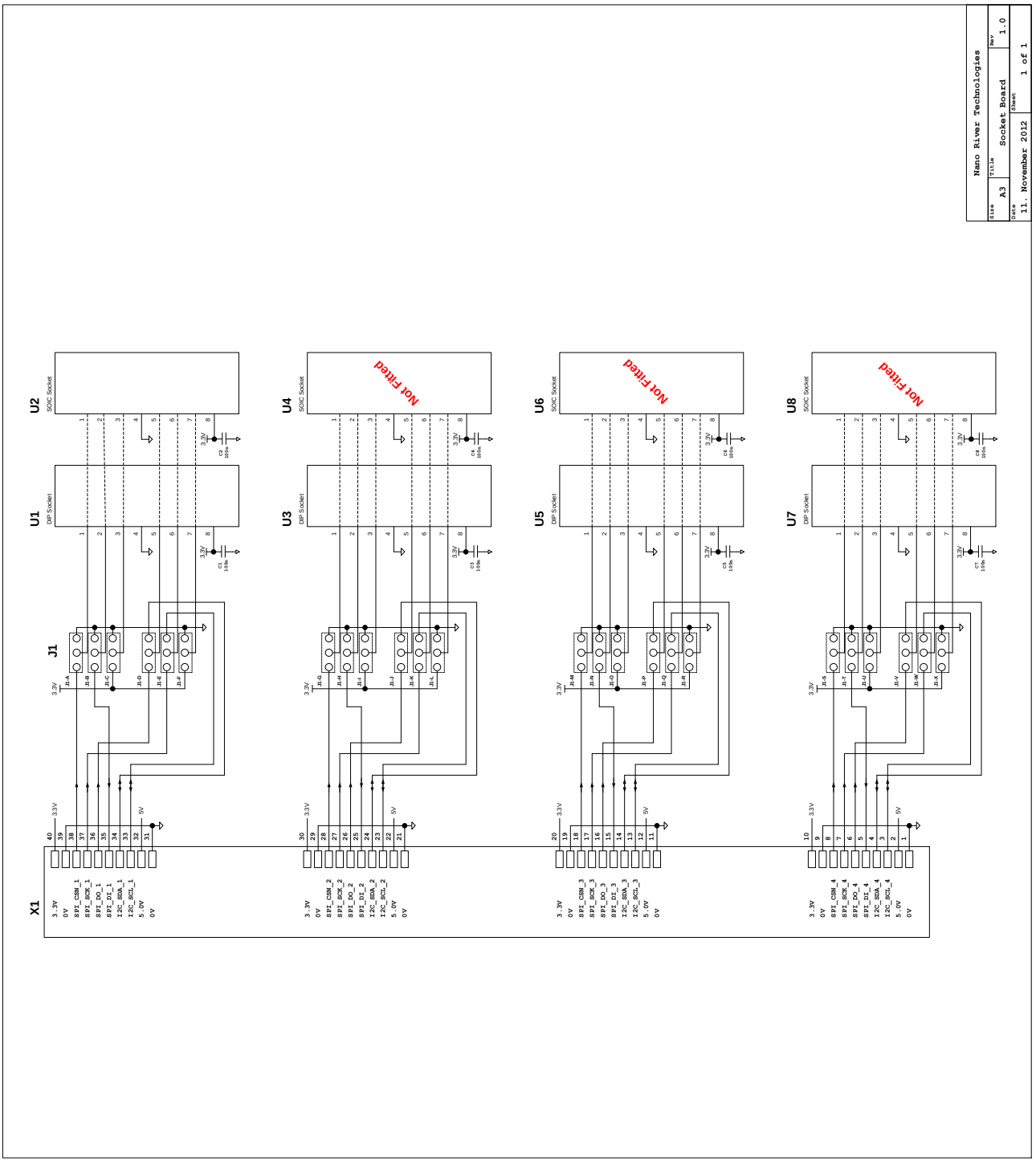

Figure 16: NR Socket Board Schematic

When programming I2C devices jumpers should be placed as shown in figure 17.

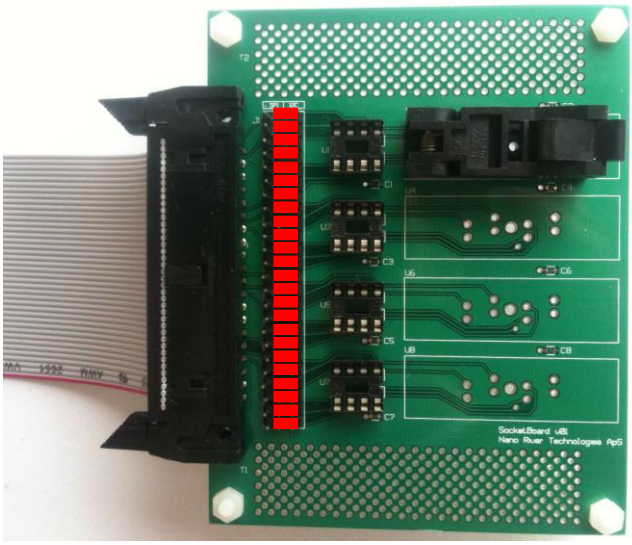

Figure 17: Jumpers when programming I2C devices

When programming SPI devices jumpers should be placed as shown in figure 18.

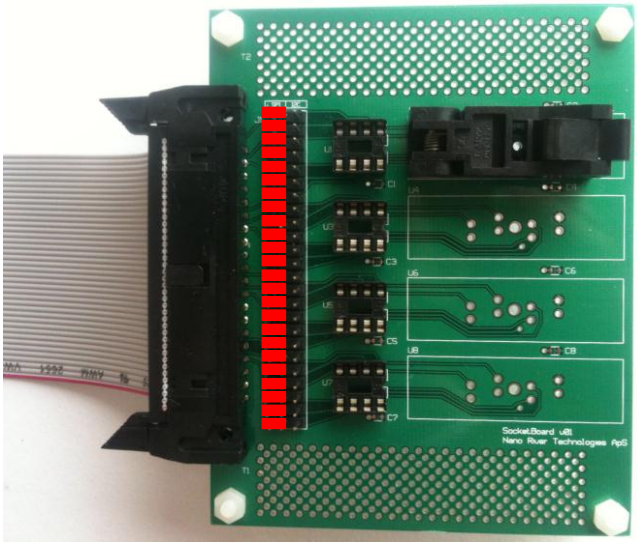

Figure 18: Jumpers when programming SPI devices